

PATENT COOPERATION TREATY

PCT/EP2005/050779

From the INTERNATIONAL BUREAU

**PCT**

NOTIFICATION OF TRANSMITTAL  
OF COPIES OF TRANSLATION  
OF THE INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY  
(CHAPTER I OR CHAPTER II  
OF THE PATENT COOPERATION TREATY)  
(PCT Rules 44bis.3(c) and 72.2)

Date of mailing (day/month/year)  
12 October 2006 (12.10.2006)

To:

Dres. Fitzner & Münch

FITZNER, Uwe  
Lintorfer Str. 10  
40878 Ratingen  
ALLEMAGNE

18. Okt. 2005

Frist : 1) MCH 18.10.2006

VFrist:

Vfg : 2) TF z. Beaub

Applicant's or agent's file reference  
MCH/LUT0301P

**IMPORTANT NOTIFICATION**

International application No.  
PCT/EP2005/050779

International filing date (day/month/year)  
16 February 2005 (16.02.2005)

Applicant

CHIRON AS et al

**1. Transmittal of the translation to the applicant.**



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter I).



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter II).

**2. Transmittal of the copy of the translation to the designated or elected Offices.**

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following designated or elected Offices requiring such translation:

None

The following designated or elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EA, EC, EE, EG, EP, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OA, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

**3. Reminder regarding translation into (one of) the official language(s) of the elected Office(s).**

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability (Chapter II).

**It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned within the applicable time limit (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.**

The International Bureau of WIPO  
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# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference MCH/LUT0301P	<b>FOR FURTHER ACTION</b>		See item 4 below
International application No. PCT/EP2005/050779	International filing date ( <i>day/month/year</i> ) 16 February 2005 (16.02.2005)	Priority date ( <i>day/month/year</i> ) 16 February 2004 (16.02.2004)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant CHIRON AS			

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).

2. This REPORT consists of a total of 13 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

<input checked="" type="checkbox"/>	Box No. I	Basis of the report
<input checked="" type="checkbox"/>	Box No. II	Priority
<input checked="" type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input checked="" type="checkbox"/>	Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/>	Box No. VI	Certain documents cited
<input type="checkbox"/>	Box No. VII	Certain defects in the international application
<input type="checkbox"/>	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

Date of issuance of this report  
04 October 2006 (04.10.2006)

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No. +41 22 338 82 70	Authorized officer  Yolaine Cussac  e-mail: pt11@wipo.int
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# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

**PCT**

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

(PCT Rule 43bis.1)

<p>Applicant's or agent's file reference <b>MCH/LUT0301P</b></p>		<p>Date of mailing (day/month/year) <b>See form PCT/ISA/210</b></p>
<p>International application No. <b>PCT/EP2005/050779</b></p>	<p>International filing date (day/month/year) <b>16.02.2005</b></p>	<p>Priority date (day/month/year) <b>16.02.2004</b></p>
<p>International Patent Classification (IPC) or both national classification and IPC <b>C07C43/29, C07C25/18, C07D319/24, C07D307/91, G01N31/22</b></p>		
<p>Applicant <b>CHIRON AS</b></p>		

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/EP	Authorized officer
Facsimile No.	Telephone No.

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Box No. I

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
 This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material
    - a sequence listing
    - table(s) related to the sequence listing
  - b. format of material
    - in written format
    - in computer readable form
  - c. time of filing/furnishing
    - contained in the international application as filed.
    - filed together with the international application in computer readable form.
    - furnished subsequently to this Authority for the purposes of search.
3.  In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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Box No. II Priority

1.  The following document has not yet been furnished:

- copy of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(a)).  
 translation of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date in the claimed priority date.

2.  This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43bis1 and 64.1) is the claimed priority date.

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

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**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

- the entire international application  
 claims Nos. 1 (part), 2 (part), 4, 5, 6 (part), 7, 8 (part), 9 (part), 10, 11 (part), 12 (part), 15, 16, 17 (part), 18, 19 (part), 20 (part), 21 (part), 22 (part), 23, 24-27 (part)

because:

- the said international application, or the said claims Nos. \_\_\_\_\_ relate to the following subject matter which does not require an international preliminary examination (*specify*):

- the description, claims or drawings (*indicate particular elements below*) or said claims Nos. \_\_\_\_\_ are so unclear that no meaningful opinion could be formed (*specify*):

- the claims, or said claims Nos. \_\_\_\_\_ are so inadequately supported by the description that no meaningful opinion could be formed.

- no international search report has been established for said claims Nos. as above

- the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

- has not been furnished  
 does not comply with the standard

the computer readable form

- has not been furnished  
 does not comply with the standard

- the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.

- See Supplemental Box for further details.

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Box No. IV      Lack of unity of invention

1.  In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has:  
 paid additional fees  
 paid additional fees under protest  
 not paid additional fees
2.  This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is  
 complied with  
 not complied with for the following reasons:

See supplemental sheet

4. Consequently, this opinion has been established in respect of the following parts of the international application:

all parts

the parts relating to claims Nos. 1 (part), 2 (part), 3, 6 (part), 8 (part), 9 (part), 11 (part), 12 (part), 13, 14, 17 (part), 19 (part), 20 (part), 21 (part), 22 (part), 24-27 (part)

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<b>Box No. V</b>	<b>Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</b>
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**1. Statement**

<b>Novelty (N)</b>	Claims <u>19, 22</u>	YES
	Claims <u>1-3, 6, 8, 9, 11-14, 17, 20, 21, 24-27</u>	NO
<b>Inventive step (IS)</b>	Claims _____	YES
	Claims <u>1-3, 6, 8, 9, 11-14, 17, 19-22, 24-27</u>	NO
<b>Industrial applicability (IA)</b>	Claims <u>1-3, 6, 8, 9, 11-14, 17, 19-22, 24-27</u>	YES
	Claims _____	NO

**2. Citations and explanations:**

**1. Reference is made to the following documents:**

- D01: WADDELL, D. ET AL: CHEMOSPHERE, 20(10-12), 1299-306  
 CODEN: CMSHAF; ISSN: 0045-6535, 1990, XP008048787
- D02: WEBER, ROLAND ET AL: CHEMOSPHERE, 34(1), 13-28  
 CODEN: CMSHAF; ISSN: 0045-6535, 1997, XP008048819
- D03: US-A-5 618 941 (DICKINSON ET AL) 8 April 1997
- D04: BARNHART, ELIZABETH R. ET AL: ANALYTICAL CHEMISTRY, 59(18), 2248-52 CODEN: ANCHAM; ISSN: 0003-2700, 1987, XP002332672
- D05: DATABASE CA [Online] CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; GOLOVCHENKO, L.S. ET AL: "The question of the transmitting ability of the mercury bridging atom" XP002332676 found in STN Database accession no. 1985:488014
- D06: DE 22 36 362 A1 (CHEMISCHE FABRIK KALK GMBH, 5000 KOELN) 14 February 1974 (1974-02-14)
- D07: EP-A-0 252 592 (IMPERIAL CHEMICAL INDUSTRIES PLC) 13 January 1988 (1988-01-13)
- D08: PATENT ABSTRACTS OF JAPAN vol. 2000, 21, 3 August 2001 (2001-08-03) - & JP 2001 097898 A (SEIMI CHEM CO LTD), 10 April 2001 (2001-04-10)
- D09: EP-A-0 488 602 (ICI PHARMA) 3 June 1992
- D10: T. SCHAEFER ET AL.: CANADIAN JOURNAL OF CHEMISTRY., vol. 66, 1988, pages 1647-1650, XP002332673
- D11: DE 199 49 950 A1 (LUTHE, GREGOR) 13 June 2001 (2001-06-13)

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

2. Novelty

2.1 The current formulation of dependent claims 2, 3, 6, 11-14 and 17 does not restrict the subject matter of the claims to which they relate to compounds in which the fragments defined in each case occur.

2.2 Document D01 describes (see page figure 1A and table 1) the fluorinated PCB derivative PCB B as a standard compound in the analysis of PCB which, where A1 = fluorophenyl, B1 = trichlorophenyl and p = 0, falls within the scope of the formula (I).

Document D04 describes (see page 2249) chlorinated 4-fluorobiphenyls as reference compounds in the analysis of polychlorinated biphenyls. For example, nonachloro-4-fluorobiphenyl is shown, which, where A1 = monovalent monofluorinated chlorinated phenyl radical and B1 = monovalent chlorinated phenyl radical, falls within the scope of the general formula (I) of claim 1. The product is prepared by chlorinating fluorobiphenyl.

The subject matter of claims 1-3, 6, 8, 9, 11-13, 17, 21 and 24 to 27 is therefore not novel (PCT Article 33(2)).

2.3 Documents D03 (see column 16 to 17, preparation 3), D05 (Chemical Abstracts, [97759-18-7], [97759-20-1], [97759-25-6]), D06 (see the example), D07 (see page 1 lines 5-15 and example 2), D08 (see abstract and paragraph [0033]) and D09 (see example 15) show further diphenyl ethers, biphenyls and diphenylmethanes and their preparation, which fall within the scope of claims 1-3, 6, 8, 9, 11-14, 17 and 21.

Document D10 describes (see page 1649, left-hand column), the preparation of 2,6-dibromo-4-fluorophenyl phenyl ether by reacting diphenyliodonium bromide with 2,6-dibromo-4-fluorophenol according to claim 20.

The subject matter of claims 1-3, 6, 8, 9, 11-14, 17, 20, 21 and 24 to 27 is therefore not novel (PCT Article 33(2)).

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Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
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2.4 The features of dependent claims 19 and 22 are not known from the prior art D01 to D10 and are accordingly novel.

3. Inventive step

3.1 It is already known from documents D01 and D04 to use fluorinated analogues as reference compounds in the analysis of halogenated polycyclic aromatics. This procedure is additionally made obvious to a person skilled in the art in D11 (see page 4 line 35 to page 5 line 40, especially page 4 lines 10-16).

Even after a possible re-establishment of novelty over the prior art D01 to D10, an inventive step could therefore be supported only on an unexpected technical effect which would have to be substantiated by representative experimental data such that it is to be expected by a person skilled in the art over the entire range claimed.

The inventive examples do not contain any data concerning an actual advantage over the prior art. The subject matter of claim 19 therefore cannot be considered to be novel (PCT Article 33(2)).

3.2 The preparation of fluorinated compounds according to one of claims 20 to 22 is obvious per se to a person skilled in the art. Claims 20 to 22 can therefore be considered as inventive under PCT Article 33(2) only when they are based on compound claims whose subject matter is novel and inventive.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Box III

1. The written opinion which follows is based only on the group of inventions i) as defined under Box IV 1.
2. In its initial stages, the search yielded a very large number of documents prejudicial to novelty. This number was so large that it became impossible to identify anything in the claims as a whole for which protection might justifiably be sought (PCT Article 6). For these reasons it does not appear possible to carry out a meaningful search covering the full range of the claims. The search report and the written opinion which follows can therefore be considered complete only for the compounds of claim 19 and their preparation and use.

Box IV

1. This Authority has established that the international application contains several inventions or groups of inventions which are not connected by a single general inventive concept (PCT Rule 13.1), specifically:

- i) Claims 1 (in part), 2 (in part), 3, 6 (in part), 8 (in part), 9 (in part), 11 (in part), 12 (in part), 13, 14, 17 (in part), 19 (in part), 20 (in part), 21 (in part), 22 (in part), 24-27 (in part):

Compounds of the formulae (I), (IV) and (V) according to claim 1 and their preparation and use. The preparation according to claim 20 only insofar as the compounds of the formula (VIII) do not fall within the scope of the formula (III) according to claim 1.

- ii) Claims 1 (in part), 4, 5, 7, 8 (in part), 9 (in part), 15, 16, 18, 19 (in part), 21 (in part), 22 (in part), 24-27 (in part):
- Compounds of the formulae (II), (VI) and (VII) according to claim 1 and their preparation and use.

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Supplemental Box

iii) Claims 1 (in part), 2 (in part), 6 (in part), 9 (in part), 10, 11 (in part), 12 (in part), 17 (in part), 19 (in part), 20 (in part), 23

Compounds of the formula (III) according to claim 1 and their preparation and use.

2. The reasons are as follows:

2.1 For the assessment of unity of invention, the search found the following relevant prior art:

D01: WADDELL, D. ET AL: CHEMOSPHERE, 20(10-12), 1299-306

CODEN: CMSHAF; ISSN: 0045-6535, 1990, XP008048787

D02: WEBER, ROLAND ET AL: CHEMOSPHERE, 34(1), 13-28 CODEN: CMSHAF; ISSN: 0045-6535, 1997, XP008048819

D3: US-A-5 618 941 (DICKINSON ET AL) 8 April 1997

Document D01 describes (see figures 1A, 1B and 1C, and also table 1) PCB, PCDD and PCDF derivatives as standard compounds in the analysis of PCB, PCDD and PCDF. The compounds PCB B, PCDD A and PCDF A shown in D01 fall within the scope of claim 1:

PCB B: Formula (I), A1 = fluorophenyl, B1 = trichlorophenyl, p = 0

PCDD A: Formula (II), A2 = fluorophenylene, B2 = dichlorophenylene, L = 0, p = 1

PCDF A: Formula (II), A2 = fluorophenylene, B2 = dichlorophenylene, L = 0, p = 0

Document D02 describes (see page 17 table 1) difluorinated chlorinated dibenzofurans which, where A2 = fluorochlorophenylene, L = 0 and p = 0, fall within the scope of the formula (VI) of claim 1, in the analysis of mixed PCFDDs and PCFDFs.

Document D03 describes (see column 16 to 17, preparation 3) the compound 1,3-dibromo-5-(4-fluorophenoxy)benzene which, where A1 = 4-fluorophenyl, B1 = dibromophenyl, L = 0 and p = 1, falls within the scope of the formula (I).

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Supplemental Box

2.2 The present groups of claims i), ii) and iii) have no common structural feature which is not already known from the compounds shown in the prior art D01 and D02. Like the compounds of groups i) and ii), the compounds known from D01 and D02 are used in the analysis of organic compounds.

The compounds of group iii) can be used to synthesize compounds of group i). However, compounds of group i) are already known from prior art D01 and D03.

Consequently, there exist no identical or corresponding technical features between the groups of claims i), ii) and iii) which might be considered to be special technical features under PCT Rule 13.2.

2.3 In view of the prior art cited above, the technical problems to be solved by the groups of claims i), ii) and iii) can be defined as follows:

Group i: Provision of further compounds for use in the analysis of organic compounds.

Group ii: Provision of further compounds for use in the analysis of organic compounds.

Group iii: Provision of starting compounds for the synthesis of compounds of the formula (I).

The common problem of groups i) and ii) is known from the prior art and is already solved there in the same way as in the present application (see above). Group iii) solves a different problem than groups i) and ii).

It is evident that neither on the basis of the problem underlying the particular invention nor their solutions defined by the special technical features of each invention can a technical relationship be established between the inventions which realizes a single general inventive concept.

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Supplemental Box

Therefore, neither with regard to the special technical features nor with regard to the problems solved is there unity of invention pursuant to PCT Rule 13.1 and 13.2 between the groups of claims mentioned.